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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/283,192	04/01/1999	YUTAKA KURABAYASHI	35.C1331	9638

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EXAMINER

SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 04/09/2002

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/283,192

Applicant(s)

KURABAYASHI, YUTAKA

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 61-82 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 61-82 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 16, 18.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. All outstanding rejections are overcome by applicants' amendment filed 1/30/02 that cancels all the pending claims and adds new claims 61-82. Further, in light of the cancellation of all pending claims, the restriction requirement is withdrawn.

This action is final given that the new grounds of rejection as set forth below are necessitated by applicants' amendment.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 61-73 and 75-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin (U.S. 5,851,274) in view of Tsutsumi et al. (U.S. 6,031,019).

Lin discloses an aqueous ink composition that contains pigment such as carbon black that is present with or without a dispersant wherein the pigment is dispersed in an aqueous medium. When the carbon black is chemically modified with anionic or cationic functional groups, it is dispersed without a dispersant. If the carbon black is not chemically modified, a dispersant is necessary. The dispersant contains hydrophilic anionic and cationic functional groups (col.11, lines 54-62, col.13, lines 17, and col.14, lines 42-45). Lin also discloses an ink jet ink printed using an ink jet printer that contains ink cartridge, and thus, ink container to store the ink, and printhead in order to print the ink (col.3, line 20, col.5, line 64, and col.6, lines 22-26).

Lin also discloses the use of an ink set comprising first and second inks containing ingredients as described above wherein each of the inks has color of cyan, magenta, yellow, or black and wherein the inks are used to form a multi-color image (col.17, line 62-col.18, line 5 and col.18, lines 36-39).

The difference between Lin and the present claimed invention is the requirement in the claims of a resin encapsulating a coloring material.

Lin discloses that the ink contains mixtures of colorants, but does not explicitly disclose the use of resin encapsulating a coloring material.

Tsutsumi et al., which is drawn to an aqueous ink jet ink composition, disclose the use of polymer encapsulated dye or pigment wherein the polymer is obtained from cationic or anionic monomers (col.3, line 65-col.4, line 12, col.4, lines 20-22, and col.6, lines 31-65) in order to produce an ink with improved waterfastness and anti-feathering properties (col.2, lines 41-43).

Although there is no explicit disclosure in either Lin or Tsutsumi et al. that the colorant which is encapsulated in Tsutsumi et al. is substantially the same color as the pigment disclosed by Lin, it is within the skill level of one of ordinary skill in the art to recognize that a single ink should be made from one color in order to enhance the color strength and image density of the ink and that using a coloring material and pigment with substantially different colors would result in an ink having uneven color, low color strength, and poor image density.

Further, since the combination of Lin in view of Tsutsumi et al. disclose an aqueous ink containing the same colorant as presently claimed, it therefore would have been obvious to one of ordinary skill in the art that the ink would intrinsically provide an image whose optical density is equivalent to that formed by an ink comprising pigment in the same amount.

In light of the motivation for using resin encapsulating a coloring material disclosed by Tsutsumi et al., it therefore would have been obvious to one of ordinary skill in the art to use this resin encapsulated colorant in the ink of Lin in order to produce an ink with low bleed through, high color strength, and high image density or improved waterfastness and fixation, and thereby arrive at the claimed invention.

4. Claim 74 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Tsutsumi et al. as applied to claims 61-73 and 75-82 above, and further in view of Hotomi et al. (U.S. 5,376,169).

The difference between Lin in view of Tsutsumi et al. and the present claimed invention is the requirement in the claims of microcapsules.

Hotomi et al., which is drawn to ink composition, discloses the use of microcapsule particles that contain dye or pigment (col.3, lines 54-57) in order to produce ink with satisfactory color density, good dispersability, and no ink-emitting trouble (col.3, lines 50-53).

In light of the motivation for using microcapsules disclosed by Hotomi et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use microcapsules in the ink of Lin in order to produce an ink which has satisfactory color density, good dispersability, and no ink-emitting trouble, and thereby arrive at the claimed invention.

5. Claims 61-68, 72-73, 75-76, 78, 80, and 82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutsumi et al. (U.S. 6,031,019) in view of either Johnson et al. (U.S. 5,803,959) or Tsang et al. (U.S. 5,886,065).

Tsutsumi et al. disclose an aqueous ink jet ink composition which contains a colorant such as a pigment encapsulated into polymer particles wherein the polymer encapsulated colorant is dispersed in an aqueous medium and is obtained from cationic and anionic monomers. It is further disclosed that not all the colorant present in the ink is encapsulated into the polymer. Thus, it is clear that the ink of Tsutsumi et al. contains pigment and resin encapsulating a coloring material as presently claimed. It is further disclosed that the ink contains a dispersant (col.3, line 65-col.4, line 12, col.4, lines 20-22, and col.6, lines 31-65).

It is noted that Tsutsumi et al. disclose that the ink jet ink is printed using an ink jet printer that contains cartridges, and thus, ink containers, to hold the ink (col.1, lines 4-5 and col.15, lines 40-42). Although there is no explicit disclosure, it is clear that such ink jet printer intrinsically possess recording head(s) as presently claimed in order to print the ink.

The difference between Tsutsumi et al. and the present claimed invention is the requirement in the claims of (a) self-dispersing pigment and (b) no explicit disclosure that the encapsulated and non-encapsulated colorants have the same color.

With respect to difference (a), Tsutsumi et al. generically disclose the use of pigments.

Johnson et al. disclose the use of a self-dispersing pigment suitable for use in ink jet inks wherein the pigment comprises carbon black having at least one attached cationic group or at least one anionic groups wherein the motivation for using such a pigment is that it produces an ink with good waterfastness (col.2, lines 51-56, col.5, line 10-col.6, line 26, and col.8, lines 40-42).

Alternatively, Tsang et al., which is drawn to ink jet ink, disclose the use of carbon black treated with either anionic group or cationic groups in order to produce an ink which is both waterfast and non-flocculating (col.2, lines 45-49 and col.5, lines 16-33).

Further, it is noted that since the combination of Tsutsumi et al. in view of either Johnson et al. or Tsang et al. disclose an aqueous ink containing the same colorant as presently claimed, it therefore would have been obvious to one of ordinary skill in the art that the ink would intrinsically provide an image whose optical density is equivalent to that formed by an ink comprising pigment in the same amount.

In light of the motivation for using self-dispersing pigment disclosed by either Johnson et al. or Tsang et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such pigment in the ink jet ink of Tsutsumi et al. in order to produce a stable ink, and thereby arrive at the claimed invention.

With respect to difference (b), given that the ink contains colorant which is encapsulated in a resin and that some of the same colorant is present in the ink in non-encapsulated form, it therefore would have been obvious to one of ordinary skill in the art that the encapsulated and non-encapsulated colorant would have the same color, and thereby arrive at the claimed invention.

6. Claims 69-70 and 74 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsutsumi et al. in view of either Johnson et al. or Tsang et al. as applied to claims 61-68, 72-73, 75-76, 78, 80, and 82 above, and further in view of Yui et al. (U.S. 5,948,155) and Hotomi et al. (U.S. 5,376,169).

The difference between Tsutsumi et al. in view of either Johnson et al. or Tsang et al. and the present claimed invention is the requirement in the claims of (a) specific type of dispersant and (b) microcapsules.

With respect to difference (a), Yui et al. disclose the use of dispersants that have anionic or cationic functional groups in order to improve dispersion stability (col.5, line 42-col.6, line 28). Using this specific dispersant will produce ink with good dispersability, good image quality, good fixation, and reliability (col.2, lines 16-20).

In light of the motivation for using specific types of dispersant disclosed by Yui et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use this dispersant in the ink of Tsutsumi et al. in order to produce an ink with good dispersability, good image quality, good fixation, and reliability and thereby arrive at the claimed invention.

With respect to difference (b), Hotomi et al., which is drawn to ink composition, discloses the use of microcapsule particles that contain dye or pigment (col.3, lines 54-57) in order to produce ink with satisfactory color density, good dispersability, and no ink-emitting trouble (col.3, lines 50-53).

In light of the motivation for using microcapsules disclosed by Hotomi et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use microcapsules in the ink of Tsutsumi et al. in order to produce an ink which has satisfactory color density, good dispersability, and no ink-emitting trouble, and thereby arrive at the claimed invention.

Response to Arguments

7. Applicant's arguments regarding Sakuma et al. (U.S. 5,877,235) have been fully considered but they are moot in light of the discontinuation of this reference against the present claims.

8. Applicant's arguments filed 1/30/02 have been fully considered but, with the exception of arguments relating to Sakuma et al., they are not persuasive.

Specifically, applicant argues that there is no motivation to combine Tsutsumi et al. with either Tsang et al. or Johnson et al. given that the effect of the self-dispersing pigment disclosed by either Tsang et al. or Johnson et al. is intrinsic to the ink compositions disclosed by each of these references, and that one cannot apply one ink component, i.e. the pigment, from either Tsang et al. or Johnson et al. to the ink of Tsutsumi et al. and know whether such an ink will work as an ink jet ink.

However, "the motivation to combine can arise from the knowledge that the prior art elements will perform their expected functions to achieve their expected results when combined for their common purpose." *Miles Lab, Inc. V. Shendon Inc.* 997 F.2d at 878, 27 USPQ 2d 1123, 1128 (Fed. Cir. 1993). Based on the teachings of either Tsang et al. or Johnson et al. one of ordinary skill in the art would have recognized that the self-dispersing pigments function so as to produce an ink with good waterfastness, or alternatively, produce an ink which is both waterfast and non-flocculating, and would have expected these pigments to function as such in other inks such as that disclosed by Tsutsumi et al.

Further, it is noted that a prima facie case of obviousness is established when three criteria are met. First, there must be some suggestion or motivation to combine the references, there must be a reasonable expectation of success, and the prior art must teach or suggest all the claim limitations (see MPEP 2142).

Given that Tsutsumi et al. discloses an ink jet ink comprising a mixture of pigment and polymer encapsulated colorant and further given that Tsang et al. or Johnson et al. are each also drawn to ink jet inks and disclose the advantages to using a specific type of pigment, it is the examiner's position that there is motivation to combine Tsutsumi et al. with either Tsang et al. or Johnson et al. Additionally, it is noted that it is prima facie obvious to combine two ingredients, each of which is targeted by the prior art to be useful for the same purpose, *In re Lindner*, 457 F.2d 506, 509, 173 USPQ 356, 359 (CCPA 1972). Further, it is the examiner's position that there is a reasonable expectation of success given that all the combined references are drawn to ink jet ink, Tsutsumi et al. disclose the use of pigment while Tsang et al. and Johnson et al. disclose advantages for using specific type of pigment, and as described above, one of ordinary skill in the art would expect the pigments of either Tsang et al. or Johnson et al. to perform their expected functions to achieve their expected results in the ink of Tsutsumi et al.. Lastly, the combination of references clearly meets all the claimed limitations as described in paragraphs 5-6 above.

Given that the examiner has established a prima facie case of obviousness, the burden of coming forward with evidence shifts to applicant who may submit additional evidence of nonobviousness. Applicant states on page 8 of the amendment that an ink containing combination of self-dispersing pigment and resin encapsulated colorant is superior to an ink

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containing pigment only. However, applicants have provided no clear and convincing evidence to support this position.

Given that Tsutsumi et al. disclose ink jet ink composition comprising pigment and polymer encapsulated colorant and given that either Tsang et al. or Johnson et al. disclose ink jet ink comprising self-dispersing pigment as well as motivation for using this specific type of pigment, it is the examiner's position, absent evidence to the contrary, that the combination of Tsutsumi et al. with Tsang et al. or Johnson et al. is proper.

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 703-305-0208. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 703-306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Callie Shosho
April 4, 2002



VASU JAGANNATHAN
SUPERVISORY PATENT EXAMINER
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